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Prevalence of Smoking among University Students, Aseer region in Saudi Arabia – A Cross-sectional study

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ABSTRACT

Introduction: Smoking is on the rise among adolescent students which affects public health and well-being. This study was conducted with the aim to estimate the prevalence of smoking among undergraduate students studying at King Khalid University, Aseer, Saudi Arabia.

Methods and materials: A cross-sectional study was conducted among 1160 undergraduate male and female students studying at King Khalid University, Saudi Arabia. The data was collected from June to November 2022. A stratified random sampling technique was used to select the samples. The data was collected through a self-administered questionnaire. Data were analyzed using SPSS-24.

Results: The students aged between 20 and 21 years (30.3%). The key finding of the study was 17% of the university students were current smokers, 5% had the habit of smoking in the past and 78.6% of the students were non-smokers. 64% of them had used regular cigarettes, 27% of them electronic cigarettes and 9% used both regular cigarettes and electronic cigarettes. 42 % started smoking between 21-25 years of their age. There was a significant association between age and intention to stop smoking with ($\chi 2 = 7.32$ at $p< 0.05$ levels).

Conclusion: Awareness regarding the adverse effects and early prevention of smoking, particularly in young adults, is crucial. Smoking cessation at a younger age is better than treating complications of smoking later in life. Hence this study recommends anti-smoking policies at the University level that need to be started and routinely evaluated.

Keywords: *Prevalence, Smoking, E-smoking, Adolescents, University students, Aseer*

INTRODUCTION

The single most preventable cause of disease and death in the world, tobacco smoking is a significant public health concern. According to the most recent studies, smoking-related mortality has increased to 7.2 million deaths per year, claiming more lives than AIDS, malaria, and tuberculosis combined (WHO, 2022). The use of tobacco and related items is a major cause of death in both developing and developed nations, and it is largely preventable. While awareness campaigns in developed nations have greatly reduced the death toll from tobacco use, smoking still has a very high prevalence rate in developing nations overall (Tiwari, 2014). The harmful effects of smoking include lung illnesses and various malignancies affecting the digestive, genitourinary, and respiratory systems. As the Kingdom of Saudi Arabia began to rapidly industrialize, globalize, and westernize, there was a dramatic change in the country's population's way of life, which led to a steep rise in the use of smoking and smokeless tobacco.

In a cross-sectional study conducted at King Saud University, Riyadh, Saudi Arabia (Mandil, 2011), the prevalence rate of smoking was 4.5% among students, 22.2% among fathers and 2.2% among mothers, 43.1% among male siblings compared to 14.8% female siblings; 15 % reported all or most of their friends smoked. Another study was conducted related to the prevalence of different forms of smoking among 1382 male students of King Faisal University, Saudi Arabia. The prevalence of current smoking was 28.1% (21.6% for cigarettes, and 14.6% for waterpipes). 17.0% of current smokers started smoking before the age of 12, and 41.4% of smokers lived in households with smokers (Al Mohamed, 2010).

A cross-sectional study was conducted at Imam Mohammad Ibn Saud Islamic University (IMSIU), Saudi Arabia to assess their smoking prevalence and tobacco and nicotine product habits. Most of the students reported having never used/tried tobacco, representing (76.4%). Most of the students who smoke began to smoke within the last five years (46.4%), which strongly indicates that they started to smoke when they entered the university.

Electronic cigarettes (e-cigarettes) have grown considerably, especially among adults and younger adults (Wang, 2018). According to the Centers for Disease Control and Prevention (CDC), 8.1 million U.S. adults used e-cigarettes in 2018, with the highest prevalence among individuals in the age range of 18–24 years (Villarroel, 2020). Waterpipe is gaining popularity not only in the Middle East but also in other nations (Akl, 2011).

A study conducted among university students in Saudi Arabia reported a percentage of 27.7% of e-cigarette users, which is almost the double of conventional cigarette smoking percentage (Qanash, 2019). E-cigarettes are gadgets made to heat a solution made of humectants (glycerol or propylene glycol), nicotine, and frequently flavoring ingredients to deliver the aerosol to.

Even though numerous research has been conducted in Saudi Arabia and the Eastern Mediterranean, there has been considerably less among college students. Scientific information regarding the incidence of smoking and related risk factors among University students in some Saudi Arabian cities, particularly among the Aseer population, is lacking. Therefore, the current study's objective is to determine the prevalence of smoking among university students in Aseer, Kingdom of Saudi Arabia.

Problem Statement

A Descriptive Cross-sectional Study to assess the Prevalence of Smoking among University students, Aseer, King Khalid University of Saudi Arabia.

Objectives

1. To determine the prevalence of Smoking Habits and Patterns among the University Students
2. To find out the association between the Intention to stop smoking with selected Background Characteristics of University students.

METHODOLOGY

Research design

This study was a cross-sectional survey design conducted among undergraduate students studying at King Khalid University, Saudi Arabia. The study was conducted for a period of 6 months from June to November 2022.

Sampling technique and sample size

All male and female undergraduate students studying at King Khalid University from all departments were included. All those who were not willing to participate were excluded. A stratified sampling technique was used to select the samples from medicine, applied medical sciences, dental, nursing, pharmacy, engineering, business administration, literature, and computer science. The data used in this study were obtained from a representative sample of 14 colleges within King Khalid University, Aseer region. The sample size was estimated to be 1200 with 1160 participating in this study and 40 questionnaires were incomplete.

Data collection

After approval from the ethics committee of King Khalid University, Abha, data was collected through a self-administered questionnaire, in google forms. Informed consent was obtained from all participants. The background and purpose of the study were explained to all participants and written consent was obtained from every participant before the study. Based on the literature and similar studies questionnaire was developed. The questionnaire comprised students' demographics and smoking habits such as how long they have been smoking, how many cigarettes per day they smoke, types of smoking, and ill effects of smoking, etc.

RESULTS

Sample Description

Demographic characteristics are presented in Table 1. A total of 1160 male and female undergraduate students participated in the study. The students were aged between 20-21 years (30.3%). More than fifty percent were females (54.7%), and 60.2% were residents of Abha. Regarding the educational level of their parents, most of them had high school 80.1% of fathers and, 79.1% of mothers. 65.3% of the study participants are living with their parents. About the academic year of study, 11.7% were from the first year, 28.4 % from the 6th level, and 10.7% were interns.

The key finding of the study was 17% of the university students were current smokers, 5% had the habit of smoking in the past and 78.6% of the students were non-smokers.

TABLE 1: Background Characteristics of the University Students (N=1160)

No	Background Characteristics	f	%
	Academic specialty Medicine	265	22.5
	Applied Medical sciences	258	22.2
	Dental	139	11.6
	Nursing	127	10.8
	Pharmacy	48	4.0
	Engineering	79	6.7
	Business Administration	76	6.2
	Literature	46	3.9
	Computer science	121	10.4
	Age in years Below 18	64	5.5
	18-19	49	4.2
	20-21	352	30.3
	22-23	332	28.6

	24-25	198	17.1
	26 or above	165	14.2
	Gender Male	526	45.3
	Female	634	54.7
	Residence Abha	698	60.2
	Khamis Mushait	265	22.8
	Ahad Rufida	84	7.2
	Sarat Abidah	47	4.1
	Dhahran Al Janoub	30	2.6
	Rijal Alma	36	3.1
	Level of father education Middle school	49	4.2
	High school	929	80.1
	University	147	12.7
	Postgraduate	35	3.0
	Other	-	-
	Level of mother education Middle school	53	4.6
	High school	917	79.1
	University	150	12.9
	Postgraduate	40	3.4
	Other	-	-
	Living with Parents	758	65.3
	Friends	169	14.6
	Alone	233	20.1
	Other	-	-
	Academic year of study Level 1	136	11.7
	Level 2	203	17.5
	Level 3	79	6.8
	Level 4	145	12.5
	Level 5	144	12.4
	Level 6	329	28.4
	Interns	124	10.7

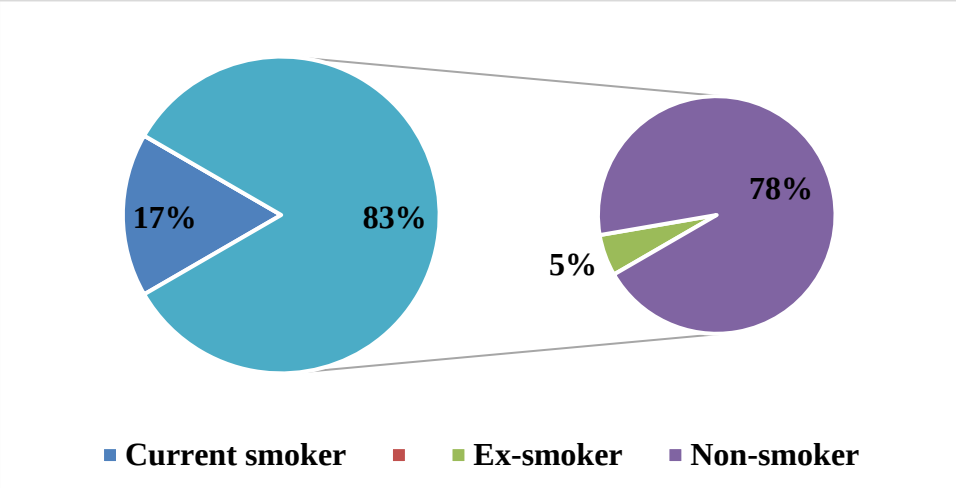

FIG 1: Prevalence of smoking among university students

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Fig 1 depicts 17% of the university students were current smokers, 5% had the habit of smoking in the past and 78 % of the students were non-smokers.

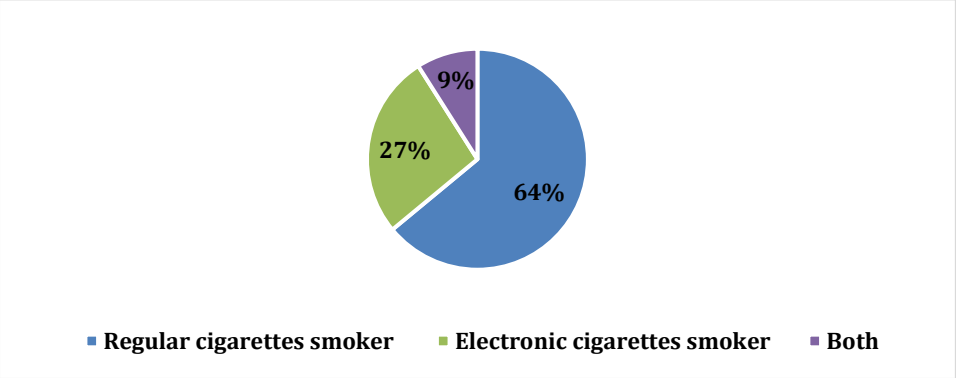

FIG 2: Percentage Distribution of types of cigarette smoking among university students

Fig 2 states 64% of them used regular cigarettes, 27% of them electronic cigarettes and 9% used both regular cigarettes and electronic cigarettes.

TABLE 2: Frequency and Percentage Distribution of Smoking Habits and Patterns among the University Students (N=249)

S.No	Smoking Habits and Patterns	f	%
	Age of smoking started Less than 10	25	10
	10-15	30	12
	16-20	90	36
	21-25	104	42
	Type of cigarettes used for smoking Conventional	159	64
	e- cigarettes	67	27
	Both	23	9
	Family members or close friends smoke Father	84	33.73
	Mother	33	13.25
	Brother	71	28.51
	Sister	1	0.40
	Friends	1	0.40
	None	58	23.29
	Others	1	0.40
	Reasons for using Electronic cigarettes Harmless	6	2.40
	Sweet smell and taste	6	2.40
	Look cool	22	8.83
	Quit smoking	85	34.13
	Easily hide the vapors	110	44.17
	Less costly	20	8.03

	Stress reduction	-	-
	Peer pressure	-	-
	The initial source of cigarette smoking Father	176	70.68
	Mother	73	29.32
	Influencing factors for starting smoking as a habit Parents	78	31.32
	Brother or sister	11	4.41
	Friends	22	8.83
	Movies	48	19.27
	Curiosity	90	36.94
	Reasons to continue smoking as a habit Feeling good	112	44.97
	Stress relieving	97	38.95
	Cannot quit	1	4.01
	Misinformation as it is harmless to health	39	15.66
	Independence	-	-
	Others	-	-
	Social factors for smoking Stress	126	50.60
	Gathering with friends	36	14.45
	Social occasions	81	32.53
	Not specific	6	2.40
	Frequency of smoking Less than 5/day	91	36.54
	5-10 /day	81	32.53
	11-20 /day	59	23.69
	More than 20/day	18	7.22
	Number of e-cigarettes usage Daily	42	63.05
	Non-daily	15	36.95
	Efforts to quit smoking Yes, succeeded	10	4.03
	Yes, fail	180	72.28
	No	59	23.69
	Intention to stop smoking in the future Yes	216	18.6
	No	33	2.8

Table 2 indicates, less than 50% of the study participants (42 %) started smoking between 21-25 years of their age, and 33.83 % of them had their family members smoke, especially fathers. Regarding the usage of electronic cigarettes, (44.17 %) of them prefer to use them because it is easy to hide the vapours and (63.05%) of them preferred to use e-cigarettes daily. (70.68%) of them stated that they used their father's cigarette for the first smoke. Their main influencing factor for starting a smoking habit was curiosity (36.94%), and (44.97%) continued smoking as a habit stating smoking gives a good sense of feeling.

Regarding the frequency of smoking, 7.22% smoke more than 20 cigarettes per day, and 72.28 % tried to quit smoking but failed whereas 18.6% of the students had the intention to stop smoking in the future.

TABLE 3: Frequency and Percentage Distribution of Knowledge on Ill Effects of Smoking among the University Students (N=1160)

S.No	Smoking Risks	f	%
1	Ill effects of smoking regular cigarettes Cancer	1002	86.4
	Breathing problems	3	0.3
	Lung disease	56	4.8
	Stroke	99	8.5
	Heart disease	-	-
2	Smoking causes acute lung injury Yes	889	76.6
	No	271	23.4
3	Smoking causes premature death Yes	1147	98.9
	No	13	1.1
4	Smoking causes different types of cancer Yes	771	66.5
	No	371	32.0
	Don't know	18	1.6
5	Problems with the usage of E-smoking devices Problem with usage Number	403	34.7
	Non-available replacing instruments	599	51.6
	Low battery storage	158	13.6
6	Source of information on risks of smoking Internet	463	39.9
	Social media	275	23.7
	Friend	422	36.4

Table 3, About the awareness of the students regarding the risk of smoking, (86.4 %) cancer, (76.6 %) acute lung injury, premature death (98.9%), different types of cancer (66.5%), problems related to e-smoking was non-available replacing instruments (51.6%) and the source of information obtained mainly through the internet (39.9%).

TABLE 4: Association between Intention to stop smoking with selected Background Characteristics of University students (N=249)

Background Characteristics	Intention to stop smoking		$\chi 2$ Value df=1
	Yes	No	
Age <21 years	120	10	7.32 p< 0. 05
>21 years	96	23	
Gender Male	160	25	0.04 p > 0. 05
Female	56	8	

Tab 4 indicates there is an association between age and intention to stop smoking ($\chi 2 = 7.32$ at $p< 0.05$ level) and there is no association between gender and intention to stop smoking ($\chi 2 = 0.04$ at $p > 0.05$ levels).

DISCUSSION

The study revealed more than half of the participants constituted young subjects aged 20 - 21 years, duplicating the findings of the study (Benjamin, 2021) most of the study participants were in age 17 – 20 years also similar to studies done among Universities in Saudi Arabian populations (Mandil, 2011).

The students explore the first episode of smoking initiation at 21-25 years of their age, which then developed as a regular practice. This indicates the initiation of smoking commonly begins at the adolescent age group when they enter the University level. Around 10% of smokers started smoking as a habit at less than 10 years of age. The study duplicates findings (Ansari, 2017) where 6% of the smokers started their smoking habit at the age of <10 years old. Further in this study, 36% of smokers initiated at the age of 16 years which is consistent with research from Dammam University, where the average age at which people start smoking was 16 years old. These figures demonstrate the need of starting a health education program about the ill effects of smoking in the first year of school. Additionally, people who began smoking before the age of 10 are more likely to continue smoking as adults (Koura, 2011 & Mohamed, 2010).

The highlights of the study reveal smoking habit started from family members who smoke, especially more common among fathers than any other family members. Further, there was an association between having a family member who smokes and being a smoker. This study is congruent with a similar study conducted among university students in the Qassim region of Saudi Arabia (Almogbel, 2010). No gender differences in smoking prevalence were found.

Most of the students stated that they used their father's cigarette for the first smoke. Their main influencing factor for starting a smoking habit was curiosity, following that they continued smoking as a habit since they had a good feeling derived after smoking. These findings replicate another conducted in 2011, the reasons for smoking initiation were curiosity and tension alleviation (Koura, 2011). The absence of a standardized questionnaire, however, might be the cause of this conflict.

The study reveals most of the students use regular cigarettes when compared to electronic cigarettes which supports the findings of (Sawalha, 2021) e-cigarette use is low with only around 10% of smokers using e-cigarettes reflecting low popularity among Jordanian university students as well as students from the USA (Franks, 2017) and Malaysia (Puteh, 2018). On the contrary, the prevalence of e-cigarettes is higher among medical students from countries such as Poland (Brozek, 2017).

Even the students using e-cigarettes preferred to use e-cigarettes on a daily basis because it is easy to hide the vapors. Studies related to e-cigarettes have become popular among students in Jordan and Saudi Arabia. Further, most of the students who smoke perceived e-cigarettes can cause severe lung injury and cancer which is contrary to the findings of the study (Ansari, 2017) where e-cigarettes were less harmful and less addictive than conventional cigarettes. Findings from the present study confirm that University students were well aware of the risks developed from conventional or e-cigarettes.

Research outputs from the study revealed a significant association between age and intention to quit smoking which is concurrent with another study on the intention to quit smoking was reported in 71.7% of participants and were been significantly associated with the male gender (Al-zalabani, 2015). When students were asked about the time they like to smoke, most reported that they smoke when they feel as a stress relieving measure which was similar to findings of another study conducted at Imam Mohammad Ibn Saud Islamic University in Saudi Arabia (Abdulrahman KA, 2022).

Lifestyle characteristics emerged as important predictors of smoking behavior. Engaging in smoking in high school increased the likelihood of smoking in college. This may indicate that

smoking among college students is part of a risk-taking lifestyle initiated well before college.

CONCLUSION

This study examined the prevalence of smoking among university students in the Aseer region of Saudi Arabia. The practice of smoking and e-cigarette smoking all had prevalence rates and the intention to quit smoking which fails is evident in this study. Awareness regarding the adverse effects and early prevention of smoking, particularly in young adults, is crucial. Smoking cessation at a younger age is better than treating complications of smoking later in life. Hence this study recommends to ensure the efficacy and efficiency of tobacco control initiatives, anti-smoking policies at the university level should be started and routinely evaluated.

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CONFLICT OF INTEREST

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Author's contribution

ASH designed the study, FMA and RMA collected data, MQA analyzed the data and LSB drafted the manuscript. ZA and NAA participated in manuscript revision and contributed to data interpretation. All the authors agreed on the final version of this article.

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